



PATENT

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re application of:

**EDWARD TYGARD**

Application No: 10/689,848

Art Unit: 3652

Filing Date: October 22, 2003

Examiner: J. Keenan

For: CLAMPING APPARATUS

**DECLARATION UNDER 37 CFR 1.132**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Dear Sir:

Further to my declaration of March 27, 2007 in connection with this application, I would like to elaborate on the commercial success of a clamping apparatus according to this invention. Specifically, in this declaration, I will show that our recent products that have achieved impressive commercial success have the features of the invention described by this application, that the reasons for this commercial success are technical features of the invention described in this application, and that there were long-standing problems with existing clamping apparatuses that were first solved by this invention.

### Characteristics of our commercial embodiments

As set forth in my previous declaration, Tygard Machine and Manufacturing Company, which is the assignee of this patent application, sells two models of clamping apparatus according to this invention. These are the Tygard Claw Model No. TC600F, which is designed for mounting on the front of a lift truck, and the Tygard Claw Model No. TC600S, which is designed for mounting on the side of a lift truck. As described in my previous declaration, both of these models have experienced significant commercial success well beyond that of our clamping apparatus prior to this invention.

Like the clamping apparatuses described in this application, each of these commercial embodiments of the invention has a frame with four clamping arms pivotably mounted on the frame. Each clamping arm can pivot on the frame with a single degree of freedom. Each clamping arm has a contact portion in the form of a gripping pad at its lower end for gripping a rectangular load. Each clamping arm includes a four-bar linkage which controls the angle of the gripping pad with respect to the clamping arm. The clamping arms can be pivoted on the frame by drive mechanisms such as hydraulic cylinders.

Our previous clamping apparatuses prior to this invention, which we sold from 1994 through 2002, had a similar structure in that they had a frame with four clamping arms pivotably mounted on the frame, each clamping arm could pivot on the frame with a single degree of freedom, each clamping arm had a contact portion in the form of a gripping pad at its lower end for gripping a rectangular load, and the clamping arms could be pivoted on the

frame by drive mechanisms such as hydraulic cylinders. However, our previous clamping apparatuses did not have a four-bar linkage for controlling the angle of a gripping pad with respect to a clamping arm. Instead, the gripping pads were either rigidly secured to the clamping arms, or else the gripping pads were pivotably mounted on the clamping arms so as to pivot when pressed against a side of a load. As a result, the angles of the gripping pads with respect to the sides of a load could not be maintained at a suitable value as the dimensions of a load varied.

In the commercial embodiments of a clamping apparatus according to this invention which are described above, when the separation between a pair of opposing gripping pads on opposing clamping arms is changed by 4 inches (which occurs when the gripping pads are moved towards or away from each other), the angle with respect to the vertical of each gripping pad of the pair of opposing gripping pads changes by no more than 2 degrees. For example, when each of the four-bar linkages of the clamping arms of the commercial embodiments of a clamping apparatus of this invention is a parallel linkage, the separation between opposing gripping pads can be changed by any amount from 0 to 16 inches with virtually no change in the angle of the gripping pads with respect to the vertical. (Sixteen inches is the maximum amount by which the separation between opposing gripping pads changes in our current models. If we made a larger model that could vary the separation between opposing gripping pads by more than 16 inches, the angle with respect to the vertical of the gripping pads would still remain virtually unchanged over the entire range of separation due to the design of the clamping arms which enables them to control the angle of the gripping pads.

In contrast, in our earlier clamping apparatuses prior to this invention, when any of the clamping arms pivoted on the frame about a horizontal axis to grasp or release a load, the angle with respect to the vertical of the gripping pad on the clamping arm, when not contacting a load, changed by the same angle as did the clamping arm. To give an example, in our old commercial products, if the length from the upper pivot point of each clamping arm to the lower end of its gripping pad was 25 inches, when two opposing clamping arms pivoted outwards from a substantially vertical position to increase the separation between opposing gripping pads by 4 inches, the angle with respect to the vertical of each gripping pad changed by 4.6 degrees, assuming that each gripping pad moved outwards by 2 inches. This means that if one of our old clamping apparatuses was gripping a rectangular load measuring 36 x 40 inches, the angle with respect to the vertical of each of the two gripping pads contacting the 36-inch sides of the load differed by 4.6 degrees compared to the angle with respect to the vertical of the other two gripping pads contacting the 40-inch sides of the load. Therefore, even if the angle with respect to the load of one of the pairs of gripping pads was suitable, the angle with respect to the load of the other pair of gripping pads was 4.6 degrees different from the angle for the first pair, and gouging and/or pinching of the load by the gripping pads could easily occur.

It can be seen that our commercial products include the feature described in this application of a four-bar linkage and the feature described in this application that the separation between a pair of opposing gripping pads on opposing clamping arms can be changed by 4 inches with the angle with respect to the vertical of each gripping pad of the pair of opposing

gripping pads changing by no more than 2 degrees.

Reasons for the commercial success of the clamping apparatus according to this invention

As set forth in my previous declaration, the commercial success of a clamping apparatus according to this invention cannot be attributed to advertising (of which we do very little), a large sales force or market power (we are a very small operation and have no full-time sales people), or price cutting compared to the competition (our price is higher than that of the closest competing product).

Earlier in this declaration, I described the similarity in the overall structure between our old clamping apparatus and the new clamping apparatus according to this invention. In addition, the old models of our clamping apparatus had the same size, the same weight, the same lifting capacity, the same operating speed, and the same price as the new models according to this invention. What the old models did not have was the ability to control the angle of the gripping pads on the clamping arms. Given these similarities between our old and new models, it is clear that the much greater commercial success of our new models can not be attributed to factors unrelated to the technical features of this invention, such as a change in the size, the lifting capacity, the price, etc. of our clamping apparatus. It is clear that the reason for the increased commercial success of our new clamping apparatus according to this invention is the ability to control the angle of the gripping pads on the clamping arms.

Even without making a point by point comparison between our old models and our new models of a clamping apparatus according to this invention, we know the reason for the much

greater commercial success of our new models compared to our old models because our customers tell us the reason. Given the nature of our business, we tend to have a considerable amount of personal contact with customers, so we have a very good idea why someone did or did not buy our product. Before a customer purchases a clamping apparatus, we often have given the customer a demonstration of its operation and sometimes have lent the customer a clamping apparatus to use on a trial basis. This is because a new customer is usually reluctant to purchase a clamping apparatus without first trying it. Each clamping apparatus which we sell is built to order, and after delivery, we often help the customer set up the clamping apparatus. On account of these personal contacts, there is never any mystery about what customers and potential customers think about our product. If they like the clamping apparatus, they tell us why they like it, and if they don't like it, they tell us exactly why it won't work for them. That is how we know why the beer and grocery industries were not interested in our old clamping apparatus prior to this invention, and why they are now excellent customers for the clamping apparatus according to this invention.

To illustrate the reasons for the commercial success of the clamping apparatus according to this invention, I have attached two letters from purchasers of our new clamping apparatus.

This first letter is from G & J Pepsi-Cola Bottlers, which is the fourth largest Pepsi bottler in the country. In 1997, G & J Pepsi-Cola purchased four of our clamping apparatuses, which at that time had gripping pads rigidly secured to the arms of the clamping apparatus. Our clamping apparatus at that time was a big improvement over the alternative of

breaking down and making up loads of soft drinks by hand. However, it had the problem that the gripping pads could not be consistently maintained at a desired angle to a load when the dimensions of the load changed. This was a particular problem when the clamping apparatus was handling fridge packs (12-can packages of cola designed to fit into a refrigerator), because the gripping pads could gouge or pinch a load and sometimes caused the fridge packs to split open. In 2003, when we introduced our new models of clamping apparatus according to this invention that have a four-bar linkage for controlling the angle of the gripping pads, the problem of pinching and damage to loads which G & J Pepsi-Cola had been experiencing with our old clamping apparatus was completely solved. G & J Pepsi-Cola not only replaced all their existing units (even though the existing units were all still fully functional) with new units but they also purchased 6 additional new units. This was a big endorsement of the technical superiority of the new clamping apparatus of this invention over the old design.

The second letter is from Giant Eagle, Inc. which is a supermarket chain based in Pittsburgh. We tried over the years to sell our previous clamping apparatus to Giant Eagle for use in handling grocery products in their warehouse, and some years ago (I believe that it was around 2000), we lent them one of our clamping apparatuses on a trial basis. The clamping apparatus which we lent them was of the type described on page 3 of my previous declaration that had gripping pads freely pivotable on the lower ends of the clamping arms. That model had the problems described on page 3 of my previous declaration, including the possibility of the clamping apparatus being unable to pick up a load or of actually dropping the load after picking it up. This was a particular problem when the load was of a small height such as when the load was a single layer of objects. Because of such problems, Giant Eagle decided not to

buy our clamping apparatus (or one made by anyone else, either) and continued to break down loads on pallets by hand. This lack of acceptance was a common phenomenon in the grocery industry.

In 2003, we showed Giant Eagle our new clamping apparatus according to this invention having a four-bar linkage for controlling the gripping pads. This time, Giant Eagle was favorably impressed with our clamping apparatus because it solved the problems of the old clamping apparatus, especially the problem of dropping a load or failing to pick up a load. As a result, Giant Eagle bought two units for their warehouse. It is clear from their letter that the reason why they purchased our new clamping apparatus according to this invention was on account of the ability of the new model to control the angle of the gripping pads.

#### Efforts by others to solve the problems of existing clamping apparatuses

As I stated on page 5 of my previous declaration, I am not aware of any clamping apparatus prior to this invention which was acceptable to either the beer or grocery industries. There is no way that I can know what efforts every worker in this field was making to solve the long-standing problems of clamping apparatuses and to try and develop a clamping apparatus for these industries. Competitors don't like to share their failures with each other, and this is not a technical field like physics or electronics, for example, in which there are researchers at universities and government laboratories writing scientific papers on recent developments. So, I cannot say that "Company A tried to develop product X in 1999", "Company B tried to develop product Y in 2000", etc., because I don't think that anyone in this field has that kind of information about his competitors.



However, I can say with confidence that there was a long-standing interest by makers of clamping apparatuses in serving these markets. Evidence of this fact is found in U.S. Patent No. 4,252,496 entitled "Hydraulic Clamp For Trays of Canned Beverages", which issued in 1981 and was based on an application filed in 1976. The first paragraph of that patent states that "This invention relates generally to a clamp means for lifting a group of objects such, for example, as twelve cases or cartons of soft drinks, beer or other bottled products." I am aware of this patent because it was cited as a reference in one of my previous patent applications and because the inventor of that patent manufactured and sold a competing product. It can be seen that over 30 years ago, there was a desire to build a clamping apparatus suitable for the beer industry. Despite this long-standing recognition by manufacturers of a need for a clamping apparatus in the beer industry, clamping apparatuses were not accepted on account of the various problems described above.

As stated on pages 5 and 6 of my previous declaration, I also know that efforts were being made prior to this invention to manufacture a clamping apparatus for handling beverages having L-shaped arms that could slide in and out linearly to grasp and release a load. A commercial product of this type is sold by others, and for a while, my company also contemplated manufacturing and selling such a clamping apparatus. However, as pointed out on pages 5 and 6 of my previous declaration, that design has operational problems in that the L-shaped arms can bend while grasping a load, resulting in the arms dropping a load. In addition, due to the nature of the loads acting on that design, the bearings used for guiding the arms undergo rapid wear and soon give out. As a result, frequent maintenance is required.

Thus, it is fair to say that others have tried and failed to develop a practical clamping apparatus that solved the problem of a variation in the angle of gripping pads as the size of a load varied.

The above-described attached letters from G & J Pepsi-Cola and Giant Eagle also show that persons in the food and beverage handling industries were aware of long-standing problems with existing clamping apparatuses. Page 1 of the letter from G & J Pepsi-Cola states that previous clamping apparatuses had a long-standing problem with the ability to pick up fridge packs without splitting them open. The letter from Giant Eagle states that they were aware, prior to the development of this invention, of the existence of other clamping apparatus, but that a clamping apparatus capable of being effectively used in the grocery industry did not exist.

In addition, the letter from Tom Seifert of Coca-Cola Enterprises Inc. which was attached to my previous declaration indicates that prior to this invention, there was a long-standing problem in clamping devices for handling cases of soft drinks in that the angle at which the pads of the clamp press against the sides of cartons and that the pads had a tendency to pinch the cartons, possibly denting and even rupturing the cans.

Thus, it can be seen that there was a clear awareness prior to this invention of the need for a clamping apparatus capable of use in the beer and grocery industries and of the unresolved problems of existing clamping apparatuses.

## Conclusion

In view of the facts which I described above, it is evident that the significant commercial success of a clamping apparatus according to this invention is due to its ability to control the angle of the gripping pads of the clamping apparatus and not to features present in our earlier clamping apparatuses or to extraneous factors such as extensive advertising. It is also clear that our clamping apparatus solved long-standing problems that others, both on the manufacturing side and on the user side, were aware of but which were never solved despite good reasons (financial rewards) for doing so. Despite the strong potential market for a clamping apparatus for use in the beer and grocery industries and an awareness of this potential in the trade, those skilled in the art were not able to develop a clamping apparatus which was acceptable to those industries. In light of these circumstances, my invention cannot be considered obvious. Also, if this invention had been obvious, it would not have met with the lack of immediate acceptance from important quarters in the beer industry, as described on pages 9 and 10 of my previous declaration.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Respectfully submitted,

A handwritten signature in cursive script, appearing to read "Edward Tygard".

Edward Tygard, President  
Tygard Machine & Manufacturing Company  
Washington, Pennsylvania

Date: 10-26-07



Commissioner for Patents  
PO Box 1450  
Alexandria, VA 22313-1450

U.S. Patent Application No. 10/689,848  
Filed on October 22, 2003  
CLAMPING APPARATUS

September 27, 2007

Dear Sir:

I am writing to you on behalf of Ed Tygard and the clamping device (Tygard Claw) that he designed for Tygard Machine and Manufacturing Company. G&J Pepsi-Cola Bottlers, Inc. is the fourth largest Pepsi bottler in the United States. My role at G&J Pepsi-Cola Bottlers is to direct the company's entire fleet operations, including day-to-day delivery, over-the-road, vending and Pepsi Express. I coordinate the transportation of our products between G&J's four (4) divisions and eight (8) satellite offices, covering most of central and southern Ohio and parts of Kentucky.

We purchased four (4) Tygard Claws in the year of 1997. At that time, the Tygard Claw had gripping pads which were fixed to its arms. That design was satisfactory for certain products, but because the angle of the gripping pads was not controllable, the gripping pads sometimes gouged or pinched the product, depending upon the dimensions of the load. This was a particularly big problem with fridge packs, one of our best selling products, which were often split open by the gripping pads on the old design. This was a long-standing problem that did not appear to have a solution. We continued to use the Tygard Claw despite some product damage because it was more economical to use the Tygard Claw than to prepare loads of products by hand. However, there was a clear need for an improved clamping device that would cause less product damage.

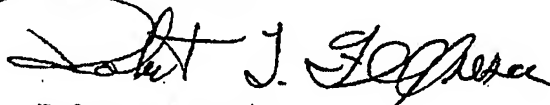
In 2004, Ed Tygard showed us his new version of the Tygard Claw. In the new design, the angle of the gripping pads is controlled by a four-bar linkage, and as a result, the gripping pads can be maintained at a constant desired angle regardless of the size of the load. This new design completely solved the long-standing problem of pinching and gouging. Our old Tygard Claws were still fully functional, but because of the huge improvement provided by the new design, we scrapped all of our old Tygard Claws and replaced them with the new design. In addition, we purchased 6 more Tygard Claws of the new design. We now operate ten (10) Tygard Claws.

The new design for the Tygard Claw has improved our company's efficiency in getting our products ready for transport, reduced the number of damaged cases per load, and strategically increased our performance. The ability of the gripping pads to maintain a constant angle to the side walls of a carton, regardless of the dimensions of the carton, as the arm pivots when pressure is applied, is a huge plus in light of the variety of products and packages we offer to our customers. When we deliver our products on time and intact (due to the new design for the Claw), our clients are pleased and will provide us another opportunity to increase our business with them.

Due to the new design for the Tygard Claw, we have optimized our use of time, increased productivity, and utilized its dynamics in both our manufacturing and service businesses. The Tygard Claw is one of the most resourceful and unique tools (clamps) produced today.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Very truly yours,

A handwritten signature in dark ink, appearing to read "Robert L. Ferguson", written over a horizontal line.

Robert L. Ferguson  
Vice President, Fleet Operation  
G&J Pepsi-Cola Bottlers, Inc.



Commissioner for Patents  
PO Box 1450  
Alexandria, VA 22313-1450

U.S. Patent Application No. 10/689,848  
Filed on October 22, 2003  
CLAMPING APPARATUS

October 9, 2007

Dear Sir:

I am the Senior Director of Supply Chain for Giant Eagle, Inc. which is a privately owned supermarket chain in the Pittsburgh area. We have supermarkets and convenience stores throughout western Pennsylvania as well as in Ohio, West Virginia and Maryland.

When products are shipped to our warehouse by manufacturers, they arrive on pallets. The products on each pallet are stacked in layers about 110 inches high. The racks in our warehouse can only hold stacks of merchandise roughly 6 feet high, so the loads need to be transferred from the manufacturers' pallets onto our own pallets and formed into stacks at most 6 feet high that can fit on the storage racks. In the past, we usually employed a commercial lumber service to do the work of transferring the loads by hand and forming the loads into 6-foot stacks.

A number of years ago, Ed Tygard of Tygard Machine & Manufacturing Company lent us, on a trial basis, a clamping device which he manufactured (the Tygard Claw) to see whether we could use it in our warehouse to transfer loads between pallets and break down loads. The Tygard Claw could transfer loads between pallets by one or more layers at a time, so it could operate much more quickly than a lumber service which had to perform the operation by hand, one carton at a time. However, the Tygard Claw at that time had a number of drawbacks. One problem was that the clamp pads could damage products in a load by stabbing or pinching because the angle of the clamp pads with respect to the sides of a load could not be controlled, and the angle varied with the dimensions of the load. Also, the Claw required precise placement of the clamp pads on the load. If the driver of a lift truck equipped with the Claw was not careful in positioning the clamp pads on a load or moved too quickly while transporting a load, the load could collapse from the center out. The Tygard Claw had definite cost advantages over a lumber service, but in light of potential product damage, it could not satisfy our need, and we did not purchase one at that time. We were aware of other clamping devices on the market that could supposedly be used for supermarket products, but none of those could reliably handle supermarket products either. There was a definite need for a clamping device that could handle delicate products without damage and without a load collapsing.

In 2003, Ed Tygard approached us with a new model of the Tygard Claw that had upgraded clamp pads. In the new Claw, the angle of the clamp pads can be controlled to a suitable value at all times by a four-link mechanism. The clamp pads in the new Claw no longer stab or pinch a product or slip against a load due to the controllable angle of the clamp pads. The upgrade to the clamp pads of the Tygard Claw has caused the following positive impacts to warehouse handling:

Increased efficiencies when clamping layers having sensitive product (for example: glass baby food, salad dressing, etc)

Increased efficiencies with the speed the driver is able to maneuver with a clamped load due to less likelihood of a load collapsing from the center out.

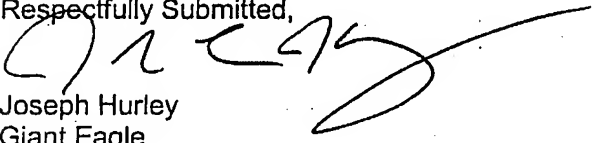
Eliminated damage with (1) even pressure application and (2) no slip clamp surface.

Attached are two pictures showing a load that in the past "the Claw" would not have been able to clamp without the new pad design. The first photo shows the Tygard Claw being positioned with respect to a stack of 3 layers of cases of Gerber products on a pallet. The second photo shows the Tygard Claw lifting the top one of the three layers off the stack. The height of the layer of cases is small compared to the height of the clamp pads. With the old design, the upper portions of the clamp pads would have rotated inwards and the bottom portions of the clamp pads would have rotated outwards and dropped the load. In the newly designed Tygard Claw, the angle of the clamp pads is controlled by the four-link mechanism, and the clamp pads are maintained at a suitable angle to the load without dropping it.

We have been aware of the existence of clamping devices for lifting layers of objects for a long time, but prior to the upgrade of the Tygard Claw, we did not use any clamping device in our warehouse because of the significant potential for product damage. The new Tygard Claw with the upgraded clamp pads has completely solved the drawbacks of existing clamping devices, and we now employ 2 Tygard Claws having the upgraded clamp pads in our warehouse. As a result, we no longer need to employ a lumber service, and an employee with a fork lift equipped with the Tygard Claw can perform the same function as a lumber service more efficiently. To us, the new Tygard Claw has provided an efficient solution to a long-standing problem.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Respectfully Submitted,



Joseph Hurley  
Giant Eagle  
Pittsburgh, PA



